LISTING OF CLAIMS

1. (currently amended). A radiation-shielded X-ray module comprising:

an X-ray tube that emits X-rays;

a high voltage power supply coupled to said X-ray tube that supplies a high voltage for use with said X-ray tube; and

electrical connection that connects the ~~X-Ray~~ X-ray tube to the high voltage power supply, ~~where in~~ wherein the X-ray ~~Tube~~ tube and the high voltage power supply are encapsulated in a solid, electrically-insulating encapsulant containing a radio-opaque material distributed within the encapsulant, the encapsulant being an ~~intimate~~direct contact with the X-ray tube and the high voltage power supply, the encapsulant being substantially free from entrained air, said radio-opaque material including a material selected from the group consisting of tungsten, lead, calcium, tantalum, tin, molybdenum, copper, strontium, aluminum, bismuth and compounds and mixtures containing any of the above materials.

2. (previously presented) The radiation-shielded X-ray module of Claim 1, further comprising:

a resonant converter that drives said high voltage power supply via an amplitude modulated waveform drive at a substantially resonant frequency.

3. (original) The radiation-shielded X-ray module of Claim 2, further comprising:

a step up transformer connected to said resonant converter; and

a high-voltage multiplier driven by said step up transformer.

4. (original) The radiation-shielded X-ray module of Claim 1, wherein an amount of said radio-opaque material is selected in accordance with a predetermined degree of radiation attenuation.

5. (currently amended). The radiation-shielded X-ray module of Claim 1, further comprising:

a thin conductive layer over said solid, electrically insulating ~~material~~ encapsulant to provide electric shielding.

6. (original) The radiation-shielded X-ray module of Claim 5, wherein said thin conductive layer is formed from one of: a conductive metallic paint, a thin metal foil, and a metallized polymer.

7. (original) The radiation-shielded X-ray module of Claim 6, wherein said thin conductive layer is formed from a thin metal foil made from at least one of: copper and aluminum.

8. (currently amended). The radiation-shielded X-ray module of Claim 7, wherein said thin metal foil is adhered directly to said solid, electrically insulating ~~material~~ encapsulant using an adhesive.

9. (currently amended). The radiation-shielded X-ray module of Claim 1, wherein the solid, electrically-insulating ~~material~~ encapsulant is molded into a complex shape.

10. (original) The radiation-shielded X-ray module of Claim 1, wherein the X-ray tube and the high-voltage power supply are connected by a coaxial cable.

11. (original) The radiation-shielded X-ray module of Claim 1, wherein the radiation-shielded X-ray module is included in a portable X-ray instrument.

12. (previously presented) An X-ray module comprising:

an X-ray tube,

a resonant converter,

a high voltage power supply driven by the resonant converter via an amplitude modulated waveform drive at a substantially resonant frequency,

electrical connection that connects the X-ray to the high voltage power supply and connects the high voltage power supply to the resonant converter, wherein the X-ray tube, high voltage power supply, and electrical connection connecting the X-ray tube to the high voltage power supply are encapsulated in solid, electrically-insulating material, said electrically insulating material

including a radio-opaque material distributed within, the radio-opaque material being selected from the group consisting of tungsten, lead, calcium, tantalum, tin, molybdenum, copper, strontium, aluminum, bismuth and compounds and mixtures containing any of the above materials, wherein the electrically-insulating material including the radio-opaque material is substantially free from entrained air.

13. (original) The X-ray module of Claim 12, wherein said solid, electrically insulating material comprises at least one of: epoxy, urethane, and silicon potting compound.

14. (original) The X-ray module of Claim 12, further comprising:

a thin conductive layer over said solid, electrically insulating material to provide electric shielding.

15. (original) The X-ray module of Claim 14, wherein said thin conductive layer is formed from one of: a conductive metallic paint, a thin metal foil, and a metallized polymer.

16. (original) The X-ray module of Claim 15, wherein said thin conductive layer is formed from a thin metal foil made from at least one of: copper and aluminum.

17. (original) The X-ray module of Claim 16, wherein said thin metal foil is adhered directly to said solid, electrically insulating material using an adhesive.

18. (original) The X-ray module of Claim 12, wherein the solid, electrically-insulating material is molded into a complex shape.

19. (original) The X-ray module of Claim 12,wherein the X-ray tube and the high-voltage power supply are connected by a coaxial cable.

20. (original) The X-ray module of Claim 12, wherein the X-ray module is included in a portable X-ray instrument.

21. (previously presented) A method of producing an X-ray module comprising:

encapsulating electronic components used in X-ray emission in a solid cast block including a radio-opaque material distributed within, said radio-opaque material including a

material selected from the group consisting of tungsten, lead, calcium, tantalum, tin, molybdenum, copper, strontium, aluminum, bismuth and compounds and mixtures containing of the above materials; and

surrounding said solid cast block by a conductive layer, wherein the solid cast block is substantially free of entrained air.

22. (original) The method of Claim 21, wherein said solid cast block comprises at least one of epoxy, urethane, and a silicon potting compound.

23. (original) The method of Claim 21, further comprising:

encapsulating power and control circuit components in a solid cast block including a radio-opaque material.

24. (original) The method of Claim 21, further comprising:

casting said solid cast block using a two-part epoxy-resin casting system.

25. (original) The method of Claim 21, wherein an amount of said radio-opaque material is in accordance with a predetermined degree of radiation attenuation.

26. (original) The method of Claim 21, wherein said conductive layer is formed from one of: a conductive metallic paint, a thin metal foil, and a metallized polymer.

27. (original) The method of Claim 26, wherein said conductive layer is formed from a thin metal foil made from at least one of: copper and aluminum.

28. (previously presented)). The method of Claim 27, further comprising:

adhering said thin metal foil directly to said solid cast block using an adhesive.

29. (original) The method of Claim 21, wherein the X-ray module is included in a portable X-ray instrument.

30. (previously presented) A radiation-shielded X-ray module comprising:

an X-ray tube that emits X-rays;

a high voltage power supply coupled to said X-ray tube that supplies a high voltage for use with said X-ray tube; and

electrical connection that connects the X-ray tube to the high voltage power supply, wherein the X-ray tube is in encapsulated in a solid electrically-insulating material containing a radio-opaque material distributed within, said radio-opaque material including a material selected from the group consisting of tungsten, lead, calcium, tantalum, tin, molybdenum, copper, strontium, aluminum, bismuth and compounds and mixtures containing any of the above materials, wherein the electrically-insulating material containing a radio-opaque material is substantially free from entrained air.

31. (original) The radiation shielded X-ray module of Claim 30, wherein the radiation-shielded X-ray module is included in a portable X-ray instrument.

32. (previously presented) The radiation-shielded X-ray module of Claim 30, further comprising:

a resonant converter that drives said high voltage power supply via an amplitude modulated waveform drive at a substantially resonant frequency.

33. (previously presented) The radiation-shielded X-ray module of Claim 32, further comprising:

a step up transformer connected to said resonant converter; and

a high-voltage multiplier driven by said step up transformer.

34. (original) The radiation-shielded X-ray module of Claim 30, wherein an amount of said radio-opaque material is in accordance with a predetermined degree of radiation attenuation.

35. (original) The radiation-shielded X-ray module of Claim 30, further comprising:

a thin conductive layer over said solid, electrically insulating material to provide electrical shielding.

36. (original) The radiation-shielded X-ray module of Claim 35, wherein said thin conductive layer is formed from one of: a conductive metallic paint, a thin metal foil, and a metallized polymer.

37. (original) The radiation-shielded X-ray module of Claim 36, wherein said thin conductive layer is formed from a thin metal foil made from at least one of: copper and aluminum.

38. (original) The radiation-shielded X-ray module of Claim 37, wherein said thin metal foil is adhered directly to said solid, electrically insulating material using an adhesive.

39. (original) The radiation-shielded X-ray module of Claim 30, wherein the solid, electrically-insulating material is molded into a complex shape.

40. (original) The radiation-shielded X-ray module of Claim 30, wherein the X-ray tube and the high-voltage power supply are connected by a coaxial cable.

41. (original) The radiation-shielded X-ray module of Claim 1, wherein the radio-opaque material comprises an oxide of tungsten, lead, or bismuth.

42. (previously presented) The radiation-shielded X-ray module of Claim 2, wherein the amplitude modulated waveform drive responds to a sensed resonant frequency.

43. (previously presented) The radiation-shielded X-ray module of Claim 12, wherein the amplitude modulated waveform drive responds to a sensed resonant frequency.

44. (previously presented) The radiation-shielded X-ray module of Claim 32, wherein the amplitude modulated waveform drive responds to a sensed resonant frequency.